

What is claimed is:

*Subject matter*

1. A multi-layer information recording medium capable of recording/rewriting information, comprising a plurality of recording layers sequentially layered through spacer layers, each recording layer being made of a material that changes reflectance upon irradiation of a beam of light and thereby being capable of recording information as a change in reflectance,

each of said plurality of recording layers being provided with alternately and adjacently aligned information rewritable regions and pre-pit regions where predetermined information has been written, average reflectance of said rewritable regions being different from average reflectance of said pre-pits regions,

wherein said pre-pit regions have recording marks that lessen a difference between the average reflectance of said rewritable regions and the average reflectance of said pre-pit regions.

2. The multi-layer information recording medium according to claim 1, wherein each of said pre-pit regions is composed of a mirror portion and a portion provided with emboss pits.

3. The multi-layer information recording medium according to claim 2, wherein said emboss pits carry address information.

4. The multi-layer information recording medium according to claim 1, wherein each of said plurality of recording layers includes land tracks and groove tracks.

TOKUYAMA

5. The multi-layer information recording medium according to claim 1, wherein each of said recording layers includes a medium layer made of a phase change material.
6. The multi-layer information recording medium according to claim 1, wherein said multi-layer information recording medium has a disc shape and said pre-pits regions are provided in a spokes-wise fashion from a center of the disc.
7. The multi-layer information recording medium according to claim 1, wherein said recording medium has a disc shape and said pre-pit regions are provided periodically in a disc tangential direction.
8. The multi-layer information recording medium according to claim 2, wherein a line of emboss pits in each of adjacent tracks are provided at a different position in a disc tangential direction.
9. The multi-layer information recording medium according to claim 1, wherein each of the recording marks recorded in said pre-pits regions is a non-modulated continuous recording mark.
10. A recording apparatus for recording/rewriting information by irradiating a beam of light to a multi-layer information recording medium capable of recording/rewriting information and comprising a plurality of recording layers sequentially layered through spacer layers, wherein each of said recording layers is made of a material that changes reflectance upon irradiation of a beam of light and thereby is capable of recording information as a change in

TOKUYA-20050920

reflectance, each of said plurality of recording layers is provided with alternately and adjacently aligned information rewritable regions and pre-pit regions where predetermined information has been written, and average reflectance of said rewritable regions is different from average reflectance of said pre-pits regions,

said recording apparatus including a circuit for generating a recording mark signal for recording a recording mark of a predetermined length in each of said pre-pit regions while the beam of light is irradiated on the pre-pit region.

11. The recording apparatus according to claim 10, further comprising a circuit for detecting said rewritable regions and said pre-pit regions.

12. The recording apparatus according to claim 10, further comprising a circuit for detecting a portion that makes the average reflectance of said pre-pit regions different from the average reflectance of said rewritable regions.

13. The recording apparatus according to claim 10, further comprising:

a circuit for detecting the recording marks already recorded in said pre-pit regions; and

a circuit for, when no recorded recording marks are detected, controlling an optical pick-up to record the recording marks in said pre-pit regions, and when the recorded recording marks are detected, controlling the optical pick-up not to over-write the recording marks in

said pre-pit regions.

14. The recording apparatus according to claim 10, wherein a non-modulated continuous recording mark is recorded in a portion having a higher reflectance than the average reflectance of said pre-pit regions.